

CLAIMS

1. A fuel having a lead content of less than or equal to 0.56 gram per liter of fuel, containing at least one first hydrocarbon base (B1) consisting essentially of isoparaffins containing 4 or 5 carbon atoms, and also at least one second hydrocarbon base (B2) consisting essentially of isoparaffins containing 6 to 9 carbon atoms, and optionally at least one supplement (B3) consisting essentially of hydrocarbons of alkylaromatic type containing 6 to 11 carbon atoms, in which:
- the content of the base B2 in the fuel is between 45% and 85% by volume and preferably between 50% and 82% by volume, and in that
 - the ratio of the volume percentage amounts B1/B2 is between 0.10 and 0.60 and preferably between 0.15 and 0.45.
2. The fuel as claimed in claim 1, characterized in that the lead content is less than 0.56 gram per liter of fuel.
3. The fuel as claimed in claim 1 or 2, characterized in that the content of the base B2 is between 55% and 75% by volume.
4. The fuel as claimed in claim 1, 2 or 3, characterized in that the content of the base B1 is between 12% and 30% by volume.
5. The fuel as claimed in one of claims 1 to 4, characterized in that it comprises less than 5% by volume of cycloparaffins containing 5 to 8 carbon atoms.
6. The fuel as claimed in one of claims 1 to 5, characterized in that the first base (B1) comprises at least 80% by volume and preferably at least 90% by volume of isoparaffins containing 5 carbon atoms.
7. The fuel as claimed in one of claims 1 to 6, characterized in that isopentane constitutes at least 90% by volume of the isoparaffins containing 5 carbon atoms.
8. The fuel as claimed in claims 1 to 7, characterized in that the content of isoparaffins containing 4 carbon atoms in the base (B1) is less than or equal to 10% by volume.

9. The fuel as claimed in any one of the preceding claims, characterized in that the second base (B2) comprises at least 80% by volume and preferably at least 90% by volume of isoparaffins containing 8 carbon atoms.

5 10. The fuel as claimed in claim 9, characterized in that isooctanes constitute at least 70% by volume and preferably at least 75% by volume of the isoparaffins containing 8 carbon atoms.

11. The fuel as claimed in any one of the preceding claims, characterized
10 in that the supplement (B3) comprises at least 80% by volume and preferably at least 85% by volume of aromatic compounds containing 6 to 9 carbon atoms.

12. The fuel as claimed in claim 11, characterized in that toluene
15 constitutes at least 45% by volume and preferably at least 50% by volume of the aromatic hydrocarbons.

13. The fuel as claimed in one of the preceding claims, characterized in
that the ratio of the volume percentage amounts B3/B2 is between 0.00 and 0.60 and
preferably between 0.00 and 0.55.
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14. The fuel as claimed in one of the preceding claims, characterized in
that the ratio of the volume percentage amounts B3/B2 is between 0.1 and 0.60 and
preferably between 0.2 and 0.45.

25 15. A fuel having a lead content of less than or equal to 0.56 gram per liter of fuel, containing at least one first part of isoparaffins containing 4 or 5 carbon atoms, and also at least one second part of isoparaffins containing 6 to 9 carbon atoms, and optionally at least one supplementary part of hydrocarbons of alkylaromatic type containing 6 to 11 carbon atoms, in which:

- 30 - the content of isoparaffins containing 6 to 9 carbon atoms in the fuel is between 45% and 85% by volume and preferably between 50% and 82% by volume, and in that
- the ratio of the volume percentage amounts of isoparaffins containing 4 or 5 carbon atoms/isoparaffins containing 6 to 9 carbon atoms is between 0.10
35 and 0.60 and preferably between 0.15 and 0.45.

16. The fuel as claimed in claim 15, characterized in that the lead content is less than 0.56 gram per liter of fuel.

17. The fuel as claimed in claim 15 or 16, characterized in that the content of isoparaffins containing 6 to 9 carbon atoms in the fuel is between 55% and 75% by volume.

5 18. The fuel as claimed in claim 15, 16 or 17, characterized in that the content of isoparaffins containing 4 or 5 carbon atoms in the fuel is between 12% and 30% by volume.

10 19. The fuel as claimed in one of claims 15 to 18, characterized in that it comprises less than 5% by volume of cycloparaffins containing 5 to 8 carbon atoms.

15 20. The fuel as claimed in one of claims 15 to 19, characterized in that the ratio of the volume percentage amounts of hydrocarbons of alkylaromatic type containing 6 to 11 carbon atoms/isoparaffins containing 6 to 9 carbon atoms is between 0.00 and 0.60 and preferably between 0.00 and 0.55.

20 21. The fuel as claimed in one of claims 15 to 20, characterized in that the ratio of the volume percentage amounts of hydrocarbons of alkylaromatic type containing 6 to 11 carbon atoms/isoparaffins containing 6 to 9 carbon atoms is between 0.1 and 0.60 and preferably between 0.2 and 0.45.

25 22. The fuel as claimed in one of the preceding claims, characterized in that its lead content is less than or equal to 0.42 gram per liter of fuel and preferably 0.28 gram per liter of fuel.

23. The fuel as claimed in one of claims 1 to 22, characterized in that its lead content is less than or equal to 0.26 and preferably less than 0.14 gram per liter of fuel.

30 24. The fuel as claimed in one of claims 1 to 22, characterized in that its lead content is between 0.10 and 0.28 and preferably between 0.14 and 0.26 gram per liter of fuel.

35 25. The fuel as claimed in one of the preceding claims, characterized in that its F4 octane number is greater than or equal to 130.

26. The fuel as claimed in any one of claims 1 to 25, characterized in that its Net Heat of Combustion (determined according to standard ASTM D4529) is

greater than or equal to 39.1 MJ/kg and preferably greater than or equal to 43.5 MJ/kg.

27. The fuel as claimed in any one of claims 1 to 25, characterized in that
5 its Net Heat of Combustion (determined according to standard ASTM D4529) is between 39.1 MJ/kg and 43.5 MJ/kg, preferably between 39.1 MJ/kg and 43 MJ/kg, advantageously between 39.1 MJ/kg and 42.2 MJ/kg and more advantageously between 39.1 MJ/kg and 41.3 MJ/kg.

10 28. A process for preparing a fuel with a low lead content and a high octane number, in which at least one first hydrocarbon base (B1) consisting essentially of isoparaffins containing 4 or 5 carbon atoms, and at least one second hydrocarbon base (B2) consisting essentially of isoparaffins containing 6 to 9 carbon atoms, and optionally a supplement (B3) consisting essentially of hydrocarbons of
15 alkylaromatic type containing 6 to 11 carbon atoms, are mixed together in amounts such that:

- the content of the base B2 in the fuel is between 45% and 85% by volume and preferably between 50% and 82% by volume, and in that
- the ratio of the volume percentage amounts B1/B2 is between 0.10 and 0.60
20 and preferably between 0.15 and 0.45.

29. The process as claimed in claim 28, for the preparation of the fuel as claimed in one of claims 1 to 27.

25 30. The use of the fuel as claimed in one of claims 1 to 27 for fueling, alone or as a mixture, an aircraft controlled-ignition engine.

31. The use of the fuel as claimed in one of claims 1 to 27 for fueling, alone or as a mixture, a controlled-ignition engine of a competition vehicle or the
30 like.

32. The use of the fuel as claimed in one of claims 1 to 27 for fueling, alone or as a mixture, a fuel processing unit, such as a reformer, coupled to a fuel cell.
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33. The use of the fuel as claimed in one of claims 1 to 27 for reducing the pollution emissions of a controlled-ignition engine.